

SEQUENCE LISTING

<110> Salbaum, Michael J.

<120> NOPE Polypeptides, Encoding Nucleic
Acids and Methods of Use

<130> P-NI 4552

<150> US 60/174,496

<151> 2000-01-04

<150> US 60/205,789

<151> 2000-05-19

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Gln Ala Val Val Leu Asp Cys Thr Leu Gly Ala Thr Ala Ala Gly Pro
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Val Thr Glu Gly Ser Tyr Ser Cys Leu Ala His Ser Pro Leu Gly Val
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180 185 190

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Lys Trp Leu Leu Gln Ile Leu Asp Val Gln Asp Ser Asp Ala Gly Ser
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Thr Ser Ser Pro Ala Leu Val His Thr Leu Asp Asp Val Pro Ser Ala
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Ala Trp Leu Pro Leu Pro Ser Ser Leu Ser Asn Gly Gln Val Leu Lys
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595 600 605

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625 630 635 640

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645 650 655

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675 680 685

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Val Gly Pro Val Arg Leu Lys Lys Val Lys Gln Tyr Glu Leu Thr
690 695 700

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725

730

735

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Val	Thr	Glu	Gly	Ser	Tyr	Ser	Cys	Leu	Ala	His	Ser	Pro	Leu	Gly	Val
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Ser	Leu	His	Pro	Glu	Ser	Gln	Ile	Val	Glu	Glu	Asn	Gly	Thr	Ala	Arg
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Phe	Glu	Cys	His	Thr	Lys	Gly	Leu	Pro	Ala	Pro	Ile	Ile	Thr	Trp	Glu
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Lys	Asp	Gln	Val	Thr	Val	Pro	Glu	Glu	Pro	Arg	Leu	Ile	Thr	Leu	Pro
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Gln	Asp	Val	Val	Ile	Val	Ala	Ala	Pro	Glu	Asn	Thr	Thr	Val	Val	Ser

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Tyr Tyr Gln Cys Val Ala Glu Asn Ser Ala Gly Thr Ala Cys Ala Ala		
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Ala Pro Leu Ala Val Val Val Arg Glu Gly Leu Pro Ser Ala Pro Thr		
420	425	430
Arg Val Thr Ala Thr Pro Leu Ser Ser Ser Val Leu Val Ala Trp		
435	440	445
Glu Arg Pro Glu Leu His Ser Glu Gln Ile Ile Gly Phe Ser Leu His		
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Ala Trp Leu Pro Leu Pro Ser Ser Leu Ser Asn Gly Gln Val Leu Lys		
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Gln Ser His Val Pro Phe Ala Pro Ala Glu Leu Lys Val Arg Ala Lys		
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Met Glu Ser Leu Val Val Ser Trp Gln Pro Pro Pro His Pro Thr Gln		
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Ala Pro Thr Pro Asp Leu Pro Ile Gln Arg Gly Pro Pro Leu Pro Pro
740 745 750
Ala His Val His Ala Glu Ser Asn Ser Ser Thr Ser Ile Trp Leu Arg
755 760 765
Trp Lys Pro Asp Phe Thr Thr Val Lys Ile Val Asn Tyr Thr Val
770 775 780
Arg Phe Gly Pro Trp Gly Leu Arg Asn Ala Ser Leu Val Thr Tyr Tyr
785 790 795 800
Thr Ser Ser Gly Glu Asp Ile Leu Ile Gly Gly Leu Lys Pro Phe Thr
805 810 815
Lys Tyr Glu Phe Ala Val Gln Ser His Gly Val Asp Met Asp Gly Pro
820 825 830
Phe Gly Ser Val Val Glu Arg Ser Thr Leu Pro Asp Arg Pro Ser Thr
835 840 845
Pro Pro Ser Asp Leu Arg Leu Ser Pro Leu Thr Pro Ser Thr Val Arg
850 855 860
Leu His Trp Cys Pro Pro Thr Glu Pro Asn Gly Glu Ile Val Glu Tyr
865 870 875 880
Leu Ile Leu Tyr Ser Asn Asn His Thr Gln Pro Glu His Gln Trp Thr
885 890 895
Leu Leu Thr Thr Glu Gly Asn Ile Phe Ser Ala Glu Val His Gly Leu
900 905 910
Glu Ser Asp Thr Arg Tyr Phe Phe Lys Met Gly Ala Arg Thr Glu Val
915 920 925
Gly Pro Gly Pro Phe Ser Arg Leu Gln Asp Val Ile Thr Leu Gln Glu
930 935 940
Thr Phe Ser Asp Ser Leu Asp Val His Ala Val Thr Gly Ile Ile Val
945 950 955 960
Gly Val Cys Leu Gly Leu Leu Cys Leu Leu Ala Cys Met Cys Ala Gly
965 970 975
Leu Arg Gln Ser Ser His Arg Glu Ala Leu Pro Gly Leu Ser Ser Ser
980 985 990
Gly Thr Pro Gly Asn Pro Ala Leu Tyr Thr Arg Ala Arg Leu Gly Pro
995 1000 1005
Pro Ser Val Pro Ala Ala His Glu Leu Glu Ser Leu Val His Pro Arg
1010 1015 1020
Pro Gln Asp Trp Ser Pro Pro Pro Ser Asp Val Glu Asp Lys Ala Glu
1025 1030 1035 1040
Val His Ser Leu Met Gly Gly Ser Val Ser Asp Cys Arg Gly His Ser
1045 1050 1055
Lys Arg Lys Ile Ser Trp Ala Gln Ala Gly Gly Pro Asn Trp Ala Gly
1060 1065 1070
Ser Trp Ala Gly Cys Glu Leu Pro Gln Gly Ser Gly Pro Arg Pro Ala
1075 1080 1085
Leu Thr Arg Ala Leu Leu Pro Pro Ala Gly Thr Gly Gln Thr Leu Leu

1090	1095	1100
Leu Gln Ala Leu Val Tyr Asp Gly Ile Lys Ser Asn Gly Arg Lys Lys		
1105	1110	1115
Pro Ser Pro Ala Cys Arg Asn Gln Val Glu Ala Glu Val Ile Val His		1120
1125	1130	1135
Ser Asp Phe Gly Ala Ser Lys Gly Cys Pro Asp Leu His Leu Gln Asp		
1140	1145	1150
Leu Glu Pro Glu Glu Pro Leu Thr Ala Glu Thr Leu Pro Ser Thr Ser		
1155	1160	1165
Gly Ala Val Asp Leu Ser Gln Gly Ala Asp Trp Leu Gly Arg Glu Leu		
1170	1175	1180
Gly Gly Cys Gln Pro Thr Thr Ser Gly Pro Glu Arg Leu Thr Cys Leu		
1185	1190	1195
Pro Glu Ala Ala Ser Ala Ser Cys Ser Cys Ser Asp Leu Gln Pro Ser		1200
1205	1210	1215
Thr Ala Ile Glu Glu Ala Pro Gly Lys Ser Cys Gln Pro Lys Ala Leu		
1220	1225	1230
Cys Pro Leu Thr Val Ser Pro Ser Leu Pro Arg Ala Pro Val Ser Ser		
1235	1240	1245
Ala Gln Val Pro		
1250		

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<211> 2796

<212> DNA

<213> Mus musculus

<220>

<221> CDS

<222> (1) ... (2796)

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1	5	10	15

gag gga ccc ctg caa gtg atc ctg ggc cct gag cag gct gtg gtg ctg	96		
Glu Gly Pro Leu Gln Val Ile Leu Gly Pro Glu Gln Ala Val Val Leu			
20	25	30	

gac tgc act ttg ggg gct aca gct gct ggg cct ccg acc agg gtg aca	144		
Asp Cys Thr Leu Gly Ala Thr Ala Ala Gly Pro Pro Thr Arg Val Thr			
35	40	45	

tgg agc aag gat gga gac act gta cta gag cat gag aac ctg cac ctg	192		
Trp Ser Lys Asp Gly Asp Thr Val Leu Glu His Glu Asn Leu His Leu			
50	55	60	

cta ccc aat ggc tcc ctg tgg ctg tcc tca ccc cta gag caa gaa gac	240		
Leu Pro Asn Gly Ser Leu Trp Leu Ser Ser Pro Leu Glu Gln Glu Asp			
65	70	75	80

agc gat gat gag gaa gct ctt agg atc tgg aag gtc act gag ggc agc Ser Asp Asp Glu Glu Ala Leu Arg Ile Trp Lys Val Thr Glu Gly Ser	85	90	95	288
tat tcc tgt ctg gcc cac agc ccg cta gga gtg gtg gcc agc cag gtt Tyr Ser Cys Leu Ala His Ser Pro Leu Gly Val Val Ala Ser Gln Val	100	105	110	336
gct gtg gtc aag ctt gcc aca ctc gaa gac ttc tct ctg cac ccc gag Ala Val Val Lys Leu Ala Thr Leu Glu Asp Phe Ser Leu His Pro Glu	115	120	125	384
tcc cag att gtg gag gag aac ggg aca gca cgc ttt gaa tgc cac acc Ser Gln Ile Val Glu Glu Asn Gly Thr Ala Arg Phe Glu Cys His Thr	130	135	140	432
aag ggc ctt cca gcc ccc atc att act tgg gaa aag gac cag gtg acc Lys Gly Leu Pro Ala Pro Ile Ile Thr Trp Glu Lys Asp Gln Val Thr	145	150	155	480
gtg cct gag gag ccc cgg ctc atc act ctt ccc aag tgg ctc ctc cag Val Pro Glu Glu Pro Arg Leu Ile Thr Leu Pro Lys Trp Leu Leu Gln	165	170	175	528
atc cta gat gtc cag gac agt gat gca ggc tcc tac cgc tgc gtg gcc Ile Leu Asp Val Gln Asp Ser Asp Ala Gly Ser Tyr Arg Cys Val Ala	180	185	190	576
acc aat tca gcc cgc caa cga ttc agc cag gag gcc tcg ctc act gtg Thr Asn Ser Ala Arg Gln Arg Phe Ser Gln Glu Ala Ser Leu Thr Val	195	200	205	624
gcc ctc aga ggg tct ttg gag gct acc agg ggg cag gat gtg gtc att Ala Leu Arg Gly Ser Leu Glu Ala Thr Arg Gly Gln Asp Val Val Ile	210	215	220	672
gtg gca gcc cca gag aac acc acg gta gtg tct gga cag aat gta gtg Val Ala Ala Pro Glu Asn Thr Thr Val Val Ser Gly Gln Asn Val Val	225	230	235	720
atg gag tgc gtg gcc tct gct gac ccc acc cct ttt gtg tcc tgg gtc Met Glu Cys Val Ala Ser Ala Asp Pro Thr Pro Phe Val Ser Trp Val	245	250	255	768
cga cag gat gga aag cct atc tcc acg gat gtc atc gtt ctg ggc cgg Arg Gln Asp Gly Lys Pro Ile Ser Thr Asp Val Ile Val Leu Gly Arg	260	265	270	816
acc aat cta ctc atc gcc agc gcg cag cct cgg cac tct gga gtc tat Thr Asn Leu Leu Ile Ala Ser Ala Gln Pro Arg His Ser Gly Val Tyr	275	280	285	864
gtc tgc cga gcc aac aag ccc ctc acg cgt gac ttc gcc act gcg gct				912

Val Cys Arg Ala Asn Lys Pro Leu Thr Arg Asp Phe Ala Thr Ala Ala
290 295 300 960
gct gag ctc cga gtg ctt gct gcc cca gcc atc tcg cag gca ccc gag
Ala Glu Leu Arg Val Leu Ala Ala Pro Ala Ile Ser Gln Ala Pro Glu
305 310 315 320
gcg ctc tcg cgg acg cgg gcc agc acc gcg cgc ttc gtg tgc cgg gcg 1008
Ala Leu Ser Arg Thr Arg Ala Ser Thr Ala Arg Phe Val Cys Arg Ala
325 330 335
tcc ggg gag cca cgg ccc gcg ctg cac tgg ctg cac gac ggg atc ccg 1056
Ser Gly Glu Pro Arg Pro Ala Leu His Trp Leu His Asp Gly Ile Pro
340 345 350
ttg cga ccc aat ggg cgc gtc aag gtg cag ggc ggt ggc ggc agc ttg 1104
Leu Arg Pro Asn Gly Arg Val Lys Val Gln Gly Gly Gly Ser Leu
355 360 365
gtc atc act cag atc ggc ctg cag gac gct ggc tac tac cag tgc gta 1152
Val Ile Thr Gln Ile Gly Leu Gln Asp Ala Gly Tyr Tyr Gln Cys Val
370 375 380
gca gaa aac agc gcg gga act gcc tgt gcc gct gcg ccc ctg gcg gta 1200
Ala Glu Asn Ser Ala Gly Thr Ala Cys Ala Ala Pro Leu Ala Val
385 390 395 400
gtg gtg cgc gag ggg ctg ccc agc gcc ccg act cgg gtc aca gcc acg 1248
Val Val Arg Glu Gly Leu Pro Ser Ala Pro Thr Arg Val Thr Ala Thr
405 410 415
ccg ctg agc agc tcc tct gtg ctg gtg gcc tgg gag cgg cct gag ttg 1296
Pro Leu Ser Ser Ser Val Leu Val Ala Trp Glu Arg Pro Glu Leu
420 425 430
cac agc gag caa atc att ggc ttc tct ctt cac tac caa aag gca agg 1344
His Ser Glu Gln Ile Ile Gly Phe Ser Leu His Tyr Gln Lys Ala Arg
435 440 445
gga gtg gac aat gtg gag tac cag ttt gca gta aac aat gac acc aca 1392
Gly Val Asp Asn Val Glu Tyr Gln Phe Ala Val Asn Asn Asp Thr Thr
450 455 460
gag ctg cag gtt cgg gac ctg gaa ccc aac acg gat tat gag ttc tac 1440
Glu Leu Gln Val Arg Asp Leu Glu Pro Asn Thr Asp Tyr Glu Phe Tyr
465 470 475 480
gtg gtg gcc tac tcc cag ctg ggg gcc agc cga acc tcc agc cca gcc 1488
Val Val Ala Tyr Ser Gln Leu Gly Ala Ser Arg Thr Ser Ser Pro Ala
485 490 495
ctg gtg cat aca ctg gac gat gtc ccc agc gca gca ccc cag ctt acc 1536
Leu Val His Thr Leu Asp Asp Val Pro Ser Ala Ala Pro Gln Leu Thr

500

505

510

ttg tcc agc ccc aac ccc tcg gac atc agg gtg gca tgg ctg ccc ctg Leu Ser Ser Pro Asn Pro Ser Asp Ile Arg Val Ala Trp Leu Pro Leu	515	520	525	1584
ccc tcc agc ctg agc aat gga cag gtg ctg aag tac aag ata gag tac Pro Ser Ser Leu Ser Asn Gly Gln Val Leu Lys Tyr Lys Ile Glu Tyr	530	535	540	1632
ggt ttg ggg aag gaa gat cag gtt ttc tcc acc gag gtg cct gga aat Gly Leu Gly Lys Glu Asp Gln Val Phe Ser Thr Glu Val Pro Gly Asn	545	550	555	1680
gag aca caa ctt acg tta aac tca ctt cag cca aac aaa gtg tac cga Glu Thr Gln Leu Thr Leu Asn Ser Leu Gln Pro Asn Lys Val Tyr Arg	565	570	575	1728
gtc cgg att tca gct ggc act ggc gct ggc tat gga gtc cct tct cag Val Arg Ile Ser Ala Gly Thr Gly Ala Gly Tyr Gly Val Pro Ser Gln	580	585	590	1776
tgg atg cag cac agg aca cct ggt gtg cac aac cag agc cat gtt ccc Trp Met Gln His Arg Thr Pro Gly Val His Asn Gln Ser His Val Pro	595	600	605	1824
ttt gcc cct gca gaa ttg aag gtg agg gca aag atg gag tcc ctg gtg Phe Ala Pro Ala Glu Leu Lys Val Arg Ala Lys Met Glu Ser Leu Val	610	615	620	1872
gtg tca tgg cag ccg ccc cct cac ccc acc cag atc tct gga tac aaa Val Ser Trp Gln Pro Pro His Pro Thr Gln Ile Ser Gly Tyr Lys	625	630	635	1920
ctc tac tgg gga gag gtg gga aca gag gag gca gat ggt gac cgc Leu Tyr Trp Gly Glu Val Gly Thr Glu Glu Ala Asp Gly Asp Arg	645	650	655	1968
ccc cca ggg ggt cgt gga gatcaa gct tgg gac gtc ggg ccc gtg cgg Pro Pro Gly Gly Arg Gly Asp Gln Ala Trp Asp Val Gly Pro Val Arg	660	665	670	2016
ctg aag aag aaa gtg aag cag tat gaa ctg acc cag tta gtc cct ggc Leu Lys Lys Val Lys Gln Tyr Glu Leu Thr Gln Leu Val Pro Gly	675	680	685	2064
agg ccg tac gag gtg aag ctc gta gct ttc aac aaa cac gag gac ggc Arg Pro Tyr Glu Val Lys Leu Val Ala Phe Asn Lys His Glu Asp Gly	690	695	700	2112
tac gct gct gtg tgg aag ggc aag acg gag aag gcg ccc acg cca gac Tyr Ala Ala Val Trp Lys Gly Lys Thr Glu Lys Ala Pro Thr Pro Asp	705	710	715	2160

ctg cct atc cag agg ggg cca ccg ctg cct cct gcc cat gtc cac gca Leu Pro Ile Gln Arg Gly Pro Pro Leu Pro Pro Ala His Val His Ala 725 730 735	2208
gag tca aac agc tcc act tcc att tgg ctt cg ^g tgg aag aag cca gac Glu Ser Asn Ser Ser Thr Ser Ile Trp Leu Arg Trp Lys Lys Pro Asp 740 745 750	2256
ttt acc act gtc aag att gtc aac tac act gta cgc ttc ggc ccc tgg Phe Thr Thr Val Lys Ile Val Asn Tyr Thr Val Arg Phe Gly Pro Trp 755 760 765	2304
ggg ctc agg aat gct tcc ctg gtc acc tac tat acc agc tct gga gaa Gly Leu Arg Asn Ala Ser Leu Val Thr Tyr Thr Ser Ser Gly Glu 770 775 780	2352
gac att ctc att ggc ggc ctg aaa cca ttt acc aag tac gag ttt gcg Asp Ile Leu Ile Gly Gly Leu Lys Pro Phe Thr Lys Tyr Glu Phe Ala 785 790 795 800	2400
gta cag tcc cac gga gtg gat atg gat ggg ccc ttt ggc tcc gtc gta Val Gln Ser His Gly Val Asp Met Asp Gly Pro Phe Gly Ser Val Val 805 810 815	2448
gaa cgc tcc acc ctg cct gac cgg cct tca aca cct cct tct gac ctg Glu Arg Ser Thr Leu Pro Asp Arg Pro Ser Thr Pro Pro Ser Asp Leu 820 825 830	2496
cgc ctg agc ccc ctg aca cca tcc acc gtt cgg tta cac tgg tgt ccc Arg Leu Ser Pro Leu Thr Pro Ser Thr Val Arg Leu His Trp Cys Pro 835 840 845	2544
ccc acg gag ccc aat ggt gag att gtg gag tat cta att ctc tac agc Pro Thr Glu Pro Asn Gly Glu Ile Val Glu Tyr Leu Ile Leu Tyr Ser 850 855 860	2592
aac aac cac acc cag ccc gaa cac cag tgg aca ctg ctc acc aca gag Asn Asn His Thr Gln Pro Glu His Gln Trp Thr Leu Leu Thr Thr Glu 865 870 875 880	2640
gga aac atc ttc agt gca gag gtc cat ggc cta gag agt gac act cgg Gly Asn Ile Phe Ser Ala Glu Val His Gly Leu Glu Ser Asp Thr Arg 885 890 895	2688
tat ttc ttc aag atg gga gcc cgc aca gag gtg ggg cct ggg ccc ttt Tyr Phe Phe Lys Met Gly Ala Arg Thr Glu Val Gly Pro Gly Pro Phe 900 905 910	2736
tcc cgc ttg cag gat gtg att act ctg caa gag aca ttc tca gac tcc Ser Arg Leu Gln Asp Val Ile Thr Leu Gln Glu Thr Phe Ser Asp Ser 915 920 925	2784

ttg gat gtg cac
Leu Asp Val His
930

2796

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<211> 932
<212> PRT
<213> Mus musculus

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Glu Gly Pro Leu Gln Val Ile Leu Gly Pro Glu Gln Ala Val Val Leu
20 25 30
Asp Cys Thr Leu Gly Ala Thr Ala Ala Gly Pro Pro Thr Arg Val Thr
35 40 45
Trp Ser Lys Asp Gly Asp Thr Val Leu Glu His Glu Asn Leu His Leu
50 55 60
Leu Pro Asn Gly Ser Leu Trp Leu Ser Ser Pro Leu Glu Gln Glu Asp
65 70 75 80
Ser Asp Asp Glu Glu Ala Leu Arg Ile Trp Lys Val Thr Glu Gly Ser
85 90 95
Tyr Ser Cys Leu Ala His Ser Pro Leu Gly Val Val Ala Ser Gln Val
100 105 110
Ala Val Val Lys Leu Ala Thr Leu Glu Asp Phe Ser Leu His Pro Glu
115 120 125
Ser Gln Ile Val Glu Glu Asn Gly Thr Ala Arg Phe Glu Cys His Thr
130 135 140
Lys Gly Leu Pro Ala Pro Ile Ile Thr Trp Glu Lys Asp Gln Val Thr
145 150 155 160
Val Pro Glu Glu Pro Arg Leu Ile Thr Leu Pro Lys Trp Leu Leu Gln
165 170 175
Ile Leu Asp Val Gln Asp Ser Asp Ala Gly Ser Tyr Arg Cys Val Ala
180 185 190
Thr Asn Ser Ala Arg Gln Arg Phe Ser Gln Glu Ala Ser Leu Thr Val
195 200 205
Ala Leu Arg Gly Ser Leu Glu Ala Thr Arg Gly Gln Asp Val Val Ile
210 215 220
Val Ala Ala Pro Glu Asn Thr Thr Val Val Ser Gly Gln Asn Val Val
225 230 235 240
Met Glu Cys Val Ala Ser Ala Asp Pro Thr Pro Phe Val Ser Trp Val
245 250 255
Arg Gln Asp Gly Lys Pro Ile Ser Thr Asp Val Ile Val Leu Gly Arg
260 265 270
Thr Asn Leu Ile Ala Ser Ala Gln Pro Arg His Ser Gly Val Tyr
275 280 285
Val Cys Arg Ala Asn Lys Pro Leu Thr Arg Asp Phe Ala Thr Ala Ala
290 295 300
Ala Glu Leu Arg Val Leu Ala Ala Pro Ala Ile Ser Gln Ala Pro Glu
305 310 315 320
Ala Leu Ser Arg Thr Arg Ala Ser Thr Ala Arg Phe Val Cys Arg Ala
325 330 335

Ser Gly Glu Pro Arg Pro Ala Leu His Trp Leu His Asp Gly Ile Pro
340 345 350
Leu Arg Pro Asn Gly Arg Val Lys Val Gln Gly Gly Gly Ser Leu
355 360 365
Val Ile Thr Gln Ile Gly Leu Gln Asp Ala Gly Tyr Tyr Gln Cys Val
370 375 380
Ala Glu Asn Ser Ala Gly Thr Ala Cys Ala Ala Ala Pro Leu Ala Val
385 390 395 400
Val Val Arg Glu Gly Leu Pro Ser Ala Pro Thr Arg Val Thr Ala Thr
405 410 415
Pro Leu Ser Ser Ser Val Leu Val Ala Trp Glu Arg Pro Glu Leu
420 425 430
His Ser Glu Gln Ile Ile Gly Phe Ser Leu His Tyr Gln Lys Ala Arg
435 440 445
Gly Val Asp Asn Val Glu Tyr Gln Phe Ala Val Asn Asn Asp Thr Thr
450 455 460
Glu Leu Gln Val Arg Asp Leu Glu Pro Asn Thr Asp Tyr Glu Phe Tyr
465 470 475 480
Val Val Ala Tyr Ser Gln Leu Gly Ala Ser Arg Thr Ser Ser Pro Ala
485 490 495
Leu Val His Thr Leu Asp Asp Val Pro Ser Ala Ala Pro Gln Leu Thr
500 505 510
Leu Ser Ser Pro Asn Pro Ser Asp Ile Arg Val Ala Trp Leu Pro Leu
515 520 525
Pro Ser Ser Leu Ser Asn Gly Gln Val Leu Lys Tyr Lys Ile Glu Tyr
530 535 540
Gly Leu Gly Lys Glu Asp Gln Val Phe Ser Thr Glu Val Pro Gly Asn
545 550 555 560
Glu Thr Gln Leu Thr Leu Asn Ser Leu Gln Pro Asn Lys Val Tyr Arg
565 570 575
Val Arg Ile Ser Ala Gly Thr Gly Ala Gly Tyr Gly Val Pro Ser Gln
580 585 590
Trp Met Gln His Arg Thr Pro Gly Val His Asn Gln Ser His Val Pro
595 600 605
Phe Ala Pro Ala Glu Leu Lys Val Arg Ala Lys Met Glu Ser Leu Val
610 615 620
Val Ser Trp Gln Pro Pro His Pro Thr Gln Ile Ser Gly Tyr Lys
625 630 635 640
Leu Tyr Trp Gly Glu Val Gly Thr Glu Glu Glu Ala Asp Gly Asp Arg
645 650 655
Pro Pro Gly Gly Arg Gly Asp Gln Ala Trp Asp Val Gly Pro Val Arg
660 665 670
Leu Lys Lys Val Lys Gln Tyr Glu Leu Thr Gln Leu Val Pro Gly
675 680 685
Arg Pro Tyr Glu Val Lys Leu Val Ala Phe Asn Lys His Glu Asp Gly
690 695 700
Tyr Ala Ala Val Trp Lys Gly Lys Thr Glu Lys Ala Pro Thr Pro Asp
705 710 715 720
Leu Pro Ile Gln Arg Gly Pro Pro Leu Pro Pro Ala His Val His Ala
725 730 735
Glu Ser Asn Ser Ser Thr Ser Ile Trp Leu Arg Trp Lys Lys Pro Asp
740 745 750
Phe Thr Thr Val Lys Ile Val Asn Tyr Thr Val Arg Phe Gly Pro Trp

755	760	765
Gly Leu Arg Asn Ala Ser Leu Val Thr Tyr Tyr Thr Ser Ser Gly Glu		
770	775	780
Asp Ile Leu Ile Gly Gly Leu Lys Pro Phe Thr Lys Tyr Glu Phe Ala		
785	790	795
Val Gln Ser His Gly Val Asp Met Asp Gly Pro Phe Gly Ser Val Val		
805	810	815
Glu Arg Ser Thr Leu Pro Asp Arg Pro Ser Thr Pro Pro Ser Asp Leu		
820	825	830
Arg Leu Ser Pro Leu Thr Pro Ser Thr Val Arg Leu His Trp Cys Pro		
835	840	845
Pro Thr Glu Pro Asn Gly Glu Ile Val Glu Tyr Leu Ile Leu Tyr Ser		
850	855	860
Asn Asn His Thr Gln Pro Glu His Gln Trp Thr Leu Leu Thr Thr Glu		
865	870	875
Gly Asn Ile Phe Ser Ala Glu Val His Gly Leu Glu Ser Asp Thr Arg		
885	890	895
Tyr Phe Phe Lys Met Gly Ala Arg Thr Glu Val Gly Pro Gly Pro Phe		
900	905	910
Ser Arg Leu Gln Asp Val Ile Thr Leu Gln Glu Thr Phe Ser Asp Ser		
915	920	925
Leu Asp Val His		
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<211> 825
<212> DNA
<213> Mus musculus

<220>
<221> CDS
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Arg Gln Ser Ser His Arg Glu Ala Leu Pro Gly Leu Ser Ser Ser Gly
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acc cca gga aac cca gcg ctc tac aca aga gct cgg ctt ggg cct ccc 96
Thr Pro Gly Asn Pro Ala Leu Tyr Thr Arg Ala Arg Leu Gly Pro Pro
20 25 30

agt gtc cct gct gcc cat gag ttg gag tcc ctc gtg cat cct cgt ccc 144
Ser Val Pro Ala Ala His Glu Leu Glu Ser Leu Val His Pro Arg Pro
35 40 45

cag gat tgg tcc cca cca ccc tca gat gtg gaa gac aag gct gaa gta 192
Gln Asp Trp Ser Pro Pro Ser Asp Val Glu Asp Lys Ala Glu Val
50 55 60

cac agc ctt atg ggt ggc agt gtt tca gat tgc cgg ggc cac tcc aag 240
His Ser Leu Met Gly Gly Ser Val Ser Asp Cys Arg Gly His Ser Lys

65

70

75

80

aga aag atc tcc tgg gct cag gca ggg gga cca aac tgg gca ggc tcc 288
Arg Lys Ile Ser Trp Ala Gln Ala Gly Gly Pro Asn Trp Ala Gly Ser
85 90 95

tgg gca ggc tgt gag ctg ccc cag ggt agt ggt cca agg ccg gct ctg 336
Trp Ala Gly Cys Glu Leu Pro Gln Gly Ser Gly Pro Arg Pro Ala Leu
100 105 110

acc cgt gct ctg ctg cct cca gcg gga acc ggg cag aca ctg ctg ctg 384
Thr Arg Ala Leu Leu Pro Pro Ala Gly Thr Gly Gln Thr Leu Leu Leu
115 120 125

caa gcc ctg gtg tat gac ggc ata aag agc aac ggg aga aag aag ccg 432
Gln Ala Leu Val Tyr Asp Gly Ile Lys Ser Asn Gly Arg Lys Lys Pro
130 135 140

tcc cca gcc tgc agg aat cag gtg gaa gct gag gtc att gtc cac tcc 480
Ser Pro Ala Cys Arg Asn Gln Val Glu Ala Glu Val Ile Val His Ser
145 150 155 160

gac ttc ggt gca tcc aaa gga tgt cct gac ctc cac ctc caa gac ctg 528
Asp Phe Gly Ala Ser Lys Gly Cys Pro Asp Leu His Leu Gln Asp Leu
165 170 175

gag cca gag gaa cca ctg act gca gag act ctg cct tcc acg tct gga 576
Glu Pro Glu Glu Pro Leu Thr Ala Glu Thr Leu Pro Ser Thr Ser Gly
180 185 190

gct gtg gat ctg tct caa gga gca gac tgg ctg ggc agg gag ctg gga 624
Ala Val Asp Leu Ser Gln Gly Ala Asp Trp Leu Gly Arg Glu Leu Gly
195 200 205

ggg tgc caa cca aca acc agt ggg cca gag agg ctc acc tgc ttg cca 672
Gly Cys Gln Pro Thr Thr Ser Gly Pro Glu Arg Leu Thr Cys Leu Pro
210 215 220

gaa gca gcc agt gcc tcc tgc tcc tgc tca gac ctc cag ccc agc act 720
Glu Ala Ala Ser Ala Ser Cys Ser Cys Ser Asp Leu Gln Pro Ser Thr
225 230 235 240

gct ata gag gag gcc cct ggg aaa agc tgc cag ccc aaa gcc ctg tgt 768
Ala Ile Glu Glu Ala Pro Gly Lys Ser Cys Gln Pro Lys Ala Leu Cys
245 250 255

cct cta aca gtc agc cca agc ctt ccc agg gcc cct gtc tcc tct gct 816
Pro Leu Thr Val Ser Pro Ser Leu Pro Arg Ala Pro Val Ser Ser Ala
260 265 270

cag gtc ccc
Gln Val Pro
275 825

<210> 6
<211> 275
<212> PRT
<213> Mus musculus

<400> 6
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Thr Pro Gly Asn Pro Ala Leu Tyr Thr Arg Ala Arg Leu Gly Pro Pro
20 25 30
Ser Val Pro Ala Ala His Glu Leu Glu Ser Leu Val His Pro Arg Pro
35 40 45
Gln Asp Trp Ser Pro Pro Pro Ser Asp Val Glu Asp Lys Ala Glu Val
50 55 60
His Ser Leu Met Gly Gly Ser Val Ser Asp Cys Arg Gly His Ser Lys
65 70 75 80
Arg Lys Ile Ser Trp Ala Gln Ala Gly Gly Pro Asn Trp Ala Gly Ser
85 90 95
Trp Ala Gly Cys Glu Leu Pro Gln Gly Ser Gly Pro Arg Pro Ala Leu
100 105 110
Thr Arg Ala Leu Leu Pro Pro Ala Gly Thr Gly Gln Thr Leu Leu Leu
115 120 125
Gln Ala Leu Val Tyr Asp Gly Ile Lys Ser Asn Gly Arg Lys Lys Pro
130 135 140
Ser Pro Ala Cys Arg Asn Gln Val Glu Ala Glu Val Ile Val His Ser
145 150 155 160
Asp Phe Gly Ala Ser Lys Gly Cys Pro Asp Leu His Leu Gln Asp Leu
165 170 175
Glu Pro Glu Glu Pro Leu Thr Ala Glu Thr Leu Pro Ser Thr Ser Gly
180 185 190
Ala Val Asp Leu Ser Gln Gly Ala Asp Trp Leu Gly Arg Glu Leu Gly
195 200 205
Gly Cys Gln Pro Thr Thr Ser Gly Pro Glu Arg Leu Thr Cys Leu Pro
210 215 220
Glu Ala Ala Ser Ala Ser Cys Ser Cys Ser Asp Leu Gln Pro Ser Thr
225 230 235 240
Ala Ile Glu Glu Ala Pro Gly Lys Ser Cys Gln Pro Lys Ala Leu Cys
245 250 255
Pro Leu Thr Val Ser Pro Ser Leu Pro Arg Ala Pro Val Ser Ser Ala
260 265 270
Gln Val Pro
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<211> 243
<212> DNA
<213> Mus musculus

<220>
<221> CDS

<222> (1) ... (243)

<400> 7

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Pro Glu Gln Ala Val Val Leu Asp Cys Thr Leu Gly Ala Thr Ala Ala
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ggg cct ccg acc agg gtg aca tgg agc aag gat gga gac act gta cta 96
Gly Pro Pro Thr Arg Val Thr Trp Ser Lys Asp Gly Asp Thr Val Leu
20 25 30

gag cat gag aac ctg cac ctg cta ccc aat ggc tcc ctg tgg ctg tcc 144
Glu His Glu Asn Leu His Leu Pro Asn Gly Ser Leu Trp Leu Ser
35 40 45

tca ccc cta gag caa gaa gac agc gat gat gag gaa gct ctt agg atc 192
Ser Pro Leu Glu Gln Glu Asp Ser Asp Asp Glu Glu Ala Leu Arg Ile
50 55 60

tgg aag gtc act gag ggc agc tat tcc tgt ctg gcc cac agc ccg cta 240
Trp Lys Val Thr Glu Gly Ser Tyr Ser Cys Leu Ala His Ser Pro Leu
65 70 75 80

gga 243
Gly

<210> 8

<211> 81

<212> PRT

<213> Mus musculus

<400> 8

Pro Glu Gln Ala Val Val Leu Asp Cys Thr Leu Gly Ala Thr Ala Ala
1 5 10 15
Gly Pro Pro Thr Arg Val Thr Trp Ser Lys Asp Gly Asp Thr Val Leu
20 25 30

Glu His Glu Asn Leu His Leu Pro Asn Gly Ser Leu Trp Leu Ser
35 40 45

Ser Pro Leu Glu Gln Glu Asp Ser Asp Asp Glu Glu Ala Leu Arg Ile
50 55 60

Trp Lys Val Thr Glu Gly Ser Tyr Ser Cys Leu Ala His Ser Pro Leu
65 70 75 80
Gly

<210> 9

<211> 192

<212> DNA

<213> Mus musculus

<220>

<221> CDS

<222> (1) ... (192)

<400> 9

gag aac ggg aca gca cgc ttt gaa tgc cac acc aag ggc ctt cca gcc 48
Glu Asn Gly Thr Ala Arg Phe Glu Cys His Thr Lys Gly Leu Pro Ala
1 5 10 15

ccc atc att act tgg gaa aag gac cag gtg acc gtg cct gag gag ccc 96
Pro Ile Ile Thr Trp Glu Lys Asp Gln Val Thr Val Pro Glu Glu Pro
20 25 30

cgg ctc atc act ctt ccc aag tgg ctc ctc cag atc cta gat gtc cag 144
Arg Leu Ile Thr Leu Pro Lys Trp Leu Leu Gln Ile Leu Asp Val Gln
35 40 45

gac agt gat gca ggc tcc tac cgc tgc gtg gcc acc aat tca gcc cgc 192
Asp Ser Asp Ala Gly Ser Tyr Arg Cys Val Ala Thr Asn Ser Ala Arg
50 55 60

<210> 10

<211> 64

<212> PRT

<213> Mus musculus

<400> 10

Glu Asn Gly Thr Ala Arg Phe Glu Cys His Thr Lys Gly Leu Pro Ala
1 5 10 15
Pro Ile Ile Thr Trp Glu Lys Asp Gln Val Thr Val Pro Glu Glu Pro
20 25 30
Arg Leu Ile Thr Leu Pro Lys Trp Leu Leu Gln Ile Leu Asp Val Gln
35 40 45
Asp Ser Asp Ala Gly Ser Tyr Arg Cys Val Ala Thr Asn Ser Ala Arg
50 55 60

<210> 11

<211> 189

<212> DNA

<213> Mus musculus

<220>

<221> CDS

<222> (1) ... (189)

<400> 11

tct gga cag aat gta gtg atg gag tgc gtg gcc tct gct gac ccc acc 48
Ser Gly Gln Asn Val Val Met Glu Cys Val Ala Ser Ala Asp Pro Thr
1 5 10 15

gtc atc gtt ctg ggc cg acc aat cta ctc atc gcc agc gcg cag cct 144
 Val Ile Val Leu Gly Arg Thr Asn Leu Leu Ile Ala Ser Ala Gln Pro
 35 40 45

cgg cac tct gga gtc tat gtc tgc cga gcc aac aag ccc ctc acg 189
 Arg His Ser Gly Val Tyr Val Cys Arg Ala Asn Lys Pro Leu Thr
 50 55 60

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<210> 12  
<211> 63  
<212> PRT  
<213> Mus musculus
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<400> 12
Ser Gly Gln Asn Val Val Met Glu Cys Val Ala Ser Ala Asp Pro Thr
   1           5           10          15
Pro Phe Val Ser Trp Val Arg Gln Asp Gly Lys Pro Ile Ser Thr Asp
   20          25          30
Val Ile Val Leu Gly Arg Thr Asn Leu Leu Ile Ala Ser Ala Gln Pro
   35          40          45
Arg His Ser Gly Val Tyr Val Cys Arg Ala Asn Lys Pro Leu Thr
   50          55          60

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<210> 13
<211> 195
<212> DNA
<213> *Mus musculus*

<220>
<221> CDS
<222> (1) ... (195)

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<400> 13
cgg gc agc acc gc gct ttc gtg ttg cgg gcg tcc ggg gag cca cgg 48
Arg Ala Ser Thr Ala Arg Phe Val Cys Arg Ala Ser Gly Glu Pro Arg
   1           5           10          15

```

ccc gcg ctg cac tgg ctg cac gac ggg atc ccg ttg cga ccc aat ggg 96
 Pro Ala Leu His Trp Leu His Asp Gly Ile Pro Leu Arg Pro Asn Gly
 20 25 30

```

cgc gtc aag gtg cag ggc ggt ggc ggc agc ttg gtc atc act cag atc    144
Arg Val Lys Val Gln Gly Gly Gly Ser Leu Val Ile Thr Gln Ile
          .      35           40           45

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ggc ctg cag gac gct ggc tac tac cag tgc gta gca gaa aac aac agc gcg 192

Gly Leu Gln Asp Ala Gly Tyr Tyr Gln Cys Val Ala Glu Asn Ser Ala
50 55 60

gga 195
Gly
65

<210> 14
<211> 65
<212> PRT
<213> Mus musculus

<400> 14
Arg Ala Ser Thr Ala Arg Phe Val Cys Arg Ala Ser Gly Glu Pro Arg
1 5 10 15
Pro Ala Leu His Trp Leu His Asp Gly Ile Pro Leu Arg Pro Asn Gly
20 25 30
Arg Val Lys Val Gln Gly Gly Gly Ser Leu Val Ile Thr Gln Ile
35 40 45
Gly Leu Gln Asp Ala Gly Tyr Tyr Gln Cys Val Ala Glu Asn Ser Ala
50 55 60

Gly
65

<210> 15
<211> 249
<212> DNA
<213> Mus musculus

<220>
<221> CDS
<222> (1)...(249)

<400> 15
agc gcc ccg act cgg gtc aca gcc acg ccg ctg agc agc tcc tct gtg 48
Ser Ala Pro Thr Arg Val Thr Ala Thr Pro Leu Ser Ser Ser Val
1 5 10 15

ctg gtg gcc tgg gag cgg cct gag ttg cac agc gag caa atc att ggc 96
Leu Val Ala Trp Glu Arg Pro Glu Leu His Ser Glu Gln Ile Ile Gly
20 25 30

ttc tct ctt cac tac caa aag gca agg gga gtg gac aat gtg gag tac 144
Phe Ser Leu His Tyr Gln Lys Ala Arg Gly Val Asp Asn Val Glu Tyr
35 40 45

cag ttt gca gta aac aat gac acc aca gag ctg cag gtt cgg gac ctg 192
Gln Phe Ala Val Asn Asn Asp Thr Thr Glu Leu Gln Val Arg Asp Leu
50 55 60

gaa ccc aac acg gat tat gag ttc tac gtg gtg gcc tac tcc cag ctg 240

Glu Pro Asn Thr Asp Tyr Glu Phe Tyr Val Val Ala Tyr Ser Gln Leu
65 70 75 80

ggg gcc agc 249
Gly Ala Ser

<210> 16
<211> 83
<212> PRT
<213> Mus musculus

<400> 16
Ser Ala Pro Thr Arg Val Thr Ala Thr Pro Leu Ser Ser Ser Val
1 5 10 15
Leu Val Ala Trp Glu Arg Pro Glu Leu His Ser Glu Gln Ile Ile Gly
20 25 30
Phe Ser Leu His Tyr Gln Lys Ala Arg Gly Val Asp Asn Val Glu Tyr
35 40 45
Gln Phe Ala Val Asn Asn Asp Thr Thr Glu Leu Gln Val Arg Asp Leu
50 55 60
Glu Pro Asn Thr Asp Tyr Glu Phe Tyr Val Val Ala Tyr Ser Gln Leu
65 70 75 80
Gly Ala Ser

<210> 17
<211> 249
<212> DNA
<213> Mus musculus

<220>
<221> CDS
<222> (1) ... (249)

<400> 17
agc gca gca ccc cag ctt acc ttg tcc agc ccc aac ccc tcg gac atc 48
Ser Ala Ala Pro Gln Leu Thr Leu Ser Ser Pro Asn Pro Ser Asp Ile
1 5 10 15

agg gtg gca tgg ctg ccc ctg ccc tcc agc ctg agc aat gga cag gtg 96
Arg Val Ala Trp Leu Pro Leu Pro Ser Ser Leu Ser Asn Gly Gln Val
20 25 30

ctg aag tac aag ata gag tac ggt ttg ggg aag gaa gat cag gtt ttc 144
Leu Lys Tyr Lys Ile Glu Tyr Gly Leu Gly Lys Glu Asp Gln Val Phe
35 40 45

tcc acc gag gtg cct gga aat gag aca caa ctt acg tta aac tca ctt 192
Ser Thr Glu Val Pro Gly Asn Glu Thr Gln Leu Thr Leu Asn Ser Leu
50 55 60

cag cca aac aaa gtg tac cga gtc cg^g att tca gct ggc act ggc gct 240
Gln Pro Asn Lys Val Tyr Arg Val Arg Ile Ser Ala Gly Thr Gly Ala
65 70 75 80

ggc tat gga 249
Gly Tyr Gly

<210> 18
<211> 83
<212> PRT
<213> Mus musculus

<400> 18
Ser Ala Ala Pro Gln Leu Thr Leu Ser Ser Pro Asn Pro Ser Asp Ile
1 5 10 15
Arg Val Ala Trp Leu Pro Leu Pro Ser Ser Leu Ser Asn Gly Gln Val
20 25 30
Leu Lys Tyr Lys Ile Glu Tyr Gly Leu Gly Lys Glu Asp Gln Val Phe
35 40 45
Ser Thr Glu Val Pro Gly Asn Glu Thr Gln Leu Thr Leu Asn Ser Leu
50 55 60
Gln Pro Asn Lys Val Tyr Arg Val Arg Ile Ser Ala Gly Thr Gly Ala
65 70 75 80
Gly Tyr Gly

<210> 19
<211> 288
<212> DNA
<213> Mus musculus

<220>
<221> CDS
<222> (1) ... (288)

<400> 19
ttt gcc cct gca gaa ttg aag gtg agg gca aag atg gag tcc ctg gtg 48
Phe Ala Pro Ala Glu Leu Lys Val Arg Ala Lys Met Glu Ser Leu Val
1 5 10 15

gtg tca tgg cag ccg ccc cct cac ccc acc cag atc tct gga tac aaa 96
Val Ser Trp Gln Pro Pro His Pro Thr Gln Ile Ser Gly Tyr Lys
20 25 30

ctc tac tgg gga gag gtg gga aca gag gag gca gat ggt gac cgc 144
Leu Tyr Trp Gly Glu Val Gly Thr Glu Glu Ala Asp Gly Asp Arg
35 40 45

ccc cca ggg ggt cgt gga gat caa gct tgg gac gtc ggg ccc gtg cgg 192

Pro Pro Gly Gly Arg Gly Asp Gln Ala Trp Asp Val Gly Pro Val Arg
50 55 60

ctg aag aag aaa gtg aag cag tat gaa ctg acc cag tta gtc cct ggc 240
Leu Lys Lys Lys Val Lys Gln Tyr Glu Leu Thr Gln Leu Val Pro Gly
65 70 75 80

agg ccg tac gag gtg aag ctc gta gct ttc aac aaa cac gag gac ggc 288
Arg Pro Tyr Glu Val Lys Leu Val Ala Phe Asn Lys His Glu Asp Gly
85 90 95

<210> 20

<211> 96

<212> PRT

<213> Mus musculus

<400> 20

Phe Ala Pro Ala Glu Leu Lys Val Arg Ala Lys Met Glu Ser Leu Val
1 5 10 15
Val Ser Trp Gln Pro Pro Pro His Pro Thr Gln Ile Ser Gly Tyr Lys
20 25 30
Leu Tyr Trp Gly Glu Val Gly Thr Glu Glu Ala Asp Gly Asp Arg
35 40 45
Pro Pro Gly Gly Arg Gly Asp Gln Ala Trp Asp Val Gly Pro Val Arg
50 55 60
Leu Lys Lys Lys Val Lys Gln Tyr Glu Leu Thr Gln Leu Val Pro Gly
65 70 75 80
Arg Pro Tyr Glu Val Lys Leu Val Ala Phe Asn Lys His Glu Asp Gly
85 90 95

<210> 21

<211> 246

<212> DNA

<213> Mus musculus

<220>

<221> CDS

<222> (1) ... (246)

<400> 21

ctg cct cct gcc cat gtc cac gca gag tca aac agc tcc act tcc att 48
Leu Pro Pro Ala His Val His Ala Glu Ser Asn Ser Ser Thr Ser Ile
1 5 10 15

tgg ctt cggttgg aag aag cca gac ttt acc act gtc aag att gtc aac 96
Trp Leu Arg Trp Lys Lys Pro Asp Phe Thr Thr Val Lys Ile Val Asn
20 25 30

tac act gta cgc ttc ggc ccc tgg ggg ctc agg aat gct tcc ctg gtc 144
Tyr Thr Val Arg Phe Gly Pro Trp Gly Leu Arg Asn Ala Ser Leu Val

35

40

45

acc tac tat acc agc tct gga gaa gac att ctc att ggc ggc ctg aaa 192
Thr Tyr Tyr Thr Ser Ser Gly Glu Asp Ile Leu Ile Gly Gly Leu Lys
50 55 60

cca ttt acc aag tac gag ttt gcg gta cag tcc cac gga gtg gat atg 240
Pro Phe Thr Lys Tyr Glu Phe Ala Val Gln Ser His Gly Val Asp Met
65 70 75 80

gat ggg 246
Asp Gly

<210> 22
<211> 82
<212> PRT
<213> Mus musculus

<400> 22
Leu Pro Pro Ala His Val His Ala Glu Ser Asn Ser Ser Thr Ser Ile
1 5 10 15
Trp Leu Arg Trp Lys Lys Pro Asp Phe Thr Thr Val Lys Ile Val Asn
20 25 30
Tyr Thr Val Arg Phe Gly Pro Trp Gly Leu Arg Asn Ala Ser Leu Val
35 40 45
Thr Tyr Tyr Thr Ser Ser Gly Glu Asp Ile Leu Ile Gly Gly Leu Lys
50 55 60
Pro Phe Thr Lys Tyr Glu Phe Ala Val Gln Ser His Gly Val Asp Met
65 70 75 80
Asp Gly

<210> 23
<211> 252
<212> DNA
<213> Mus musculus

<220>
<221> CDS
<222> (1) ... (252)

<400> 23 48
aca cct cct tct gac ctg cgc ctg agc ccc ctg aca cca tcc acc gtt
Thr Pro Pro Ser Asp Leu Arg Leu Ser Pro Leu Thr Pro Ser Thr Val
1 5 10 15

cgg tta cac tgg tgt ccc ccc acg gag ccc aat ggt gag att gtg gag 96
Arg Leu His Trp Cys Pro Pro Thr Glu Pro Asn Gly Glu Ile Val Glu
20 25 30

tat cta att ctc tac agc aac aac cac acc cag ccc gaa cac cag tgg 144
Tyr Leu Ile Leu Tyr Ser Asn Asn His Thr Gln Pro Glu His Gln Trp
35 40 45

aca ctg ctc acc aca gag gga aac atc ttc agt gca gag gtc cat ggc 192
Thr Leu Leu Thr Thr Glu Gly Asn Ile Phe Ser Ala Glu Val His Gly
50 55 60

cta gag agt gac act cggtat ttc ttc aag atg gga gcc cgc aca gag 240
Leu Glu Ser Asp Thr Arg Tyr Phe Phe Lys Met Gly Ala Arg Thr Glu
65 70 75 80

gtg ggg cct ggg 252
Val Gly Pro Gly

<210> 24
<211> 84
<212> PRT
<213> Mus musculus

<400> 24
Thr Pro Pro Ser Asp Leu Arg Leu Ser Pro Leu Thr Pro Ser Thr Val
1 5 10 15
Arg Leu His Trp Cys Pro Pro Thr Glu Pro Asn Gly Glu Ile Val Glu
20 25 30
Tyr Leu Ile Leu Tyr Ser Asn Asn His Thr Gln Pro Glu His Gln Trp
35 40 45
Thr Leu Leu Thr Thr Glu Gly Asn Ile Phe Ser Ala Glu Val His Gly
50 55 60
Leu Glu Ser Asp Thr Arg Tyr Phe Phe Lys Met Gly Ala Arg Thr Glu
65 70 75 80
Val Gly Pro Gly

<210> 25
<211> 26
<212> DNA
<213> Artificial Sequence

<220>
<223> oligonucleotide primer

<400> 25
aaggcgttgc gcctctctgg cccact 26

<210> 26
<211> 26
<212> DNA
<213> Artificial Sequence

<220>
<223> oligonucleotide primer

<400> 26
cttgagacag atccacagct ccagac 26

<210> 27
<211> 30
<212> DNA
<213> Artificial Sequence

<220>
<223> oligonucleotide primer

<400> 27
atccggaaag ggcttccctg tgggagctc 30

<210> 28
<211> 26
<212> DNA
<213> Artificial Sequence

<220>
<223> oligonucleotide primer

<400> 28
gcgcgtggga catcgccag tgtatg 26

<210> 29
<211> 28
<212> DNA
<213> Artificial Sequence

<220>
<223> oligonucleotide primer

<400> 29
gttccaggc ccgaacctgc agctctgt 28

<210> 30
<211> 27
<212> DNA
<213> Artificial Sequence

<220>
<223> oligonucleotide primer

<400> 30
ccactccccct tgcctttgg tagtgaa 27

<210> 31
<211> 21
<212> DNA

<213> Artificial Sequence

<220>

<223> oligonucleotide primer

<400> 31

gtgctgacct tctgcctgct g

21

<210> 32

<211> 22

<212> DNA

<213> Artificial Sequence

<220>

<223> oligonucleotide primer

<400> 32

ctctgtctgc tacactggtc aa

22

<210> 33

<211> 18

<212> DNA

<213> Artificial Sequence

<220>

<223> oligonucleotide primer

<400> 33

tggacgccaa ggagttgg

18

<210> 34

<211> 19

<212> DNA

<213> Artificial Sequence

<220>

<223> oligonucleotide primer

<400> 34

caaatcccac agaacagga

19

<210> 35

<211> 17

<212> DNA

<213> Artificial Sequence

<220>

<223> oligonucleotide primer

<400> 35

acgggcatca tcgtggg

17

<210> 36

<211> 25
<212> DNA
<213> Artificial Sequence

<220>
<223> oligonucleotide primer

<400> 36
gaggaggaca atccgggaag ggctt

25

<210> 37
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> oligonucleotide primer

<400> 37
tcaaggcgtt gacacttgac tgtg

24

<210> 38
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> oligonucleotide primer

<400> 38
taatctcaca gtgatgagag gaga

24

<210> 39
<211> 26
<212> DNA
<213> Artificial Sequence

<220>
<223> oligonucleotide primer

<400> 39
ctgtgtctca atcttgaaca aacaca

26

<210> 40
<211> 25
<212> DNA
<213> Artificial Sequence

<220>
<223> oligonucleotide primer

<400> 40
ggaagagaga cagtaaacat ttcggt

25

<210> 41
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> oligonucleotide primer

<400> 41
ctcccttcct tcctgatcgt ttcc

24

<210> 42
<211> 25
<212> DNA
<213> Artificial Sequence

<220>
<223> oligonucleotide primer

<400> 42
cggctctcaa gcactgcaga ttttg

25

<210> 43
<211> 500
<212> DNA
<213> Mus musculus

<220>
<221> CDS
<222> (276) ... (338)

<400> 43
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cccccgcggtg ggccgcgtgc ccaagatggc gatggagggg cgggcgagct ggccgcggcc 120
ccggcccccccg cgccggccccc cgctcggtccc cggcccccggc ggcccgccgc ccggccgcgg 180
cgccgcgcct cccggagcca ctgacgcggc ggcgcgcctc cccggcgccgc ggcccaggcg 240
cccggaacgcg gcggcagcgg cccgagcccg gcct atg gcg cgg gcg gac acg 293
Met Ala Arg Ala Asp Thr

1

5

ggc cgc ggg ctc ctg gtg ctg acc ttc tgc ctg tcc gcg cgc 338
Gly Arg Gly Leu' Leu Val Leu Thr Phe Cys Leu Leu Ser Ala Arg
10 15 20

ggttaagggcc cgggtggccg cagtcgcgag tggcggtccc cggcgcccg gatgcttgcg 398
cgcggggggc tggggggact tgcccccagg ggggtgtgt cttgctgtg cacagcctgg 458
cacctgtcggt gtccccctgc gcgtggccct tgtcatgtg ag 500

<210> 44
<211> 21
<212> PRT
<213> Mus musculus

<400> 44

Met Ala Arg Ala Asp Thr Gly Arg Gly Leu Leu Val Leu Thr Phe Cys
1 5 10 15
Leu Leu Ser Ala Arg
20

<210> 45

<211> 3756

<212> DNA

<213> Mus musculus

<400> 45

atggcgccggg cggacacggg ccgcgggctc ctggtgctga cttctgcct gctgtccgc 60
cgcgccggagc tgccattgcc ccaggagaca actgtcaagc tgagctgtga tgagggaccc 120
ctgcaagtga tcctgggccc tgacggct gtgggtctgg actgcactt gggggctaca 180
gctgctgggc ctccgaccag ggtgacatgg agcaaggatg gagacactgt actagagcat 240
gagaacctgc acctgctacc caatggctcc ctgtggctgt cctcaccctt agagcaagaa 300
gacagcgatg atgaggaagc tcttaggatc tggaaggtca ctgagggcag ctattcctgt 360
ctggcccaca gcccgttagg agtgggtggc agccaggtt ctgtggtcaa gcttgcacaca 420
ctcgaagact tctctctgca ccccgagtcc cagattgtgg aggagaacgg gacagcacgc 480
tttgaatgcc acaccaaggg cttccagcc cccatcatta ctggggaaaa ggaccagggt 540
accgtgcctg aggagccccg gtcataact cttccaaatg ggctcctcca gatcttagat 600
gtccaggaca gtgatgcagg ctccatccgc tgctggcca ccaattcagc ccgcacacga 660
ttcagccagg aggctcgct cactgtggcc ctcaagggtt ctggggaggc taccoaggggg 720
caggatgtgg tcattgtggc agccccagag aacaccacgg tagtgtctgg acagaatgt 780
gtgatggagt gcgtggctc tgctgacccc acccctttt tgcctgggt ccgacaggat 840
ggaaagccta tctccacgga tgtcatcggt ctggggccga ccaatctact catgcacgc 900
gcmcgcctc ggcactctgg agtctatgtc tgccgagcca acaagccct cacgcgtac 960
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ccacggcccg cgctgcactg gtcgcacgac gggatcccgt tgcaacccaa tggcgccgtc 1140
aagggtcagg gcggtggcgg cagttggc atcactcaga tggcctgca ggacgctggc 1200
tactaccagt gcgttagcaga aaacagcgcg ggaactgcct tgcctgcgcc gcccctggcg 1260
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aacaaatgaca ccacagagct gcagggttcgg gacctggAAC ccaacacggaa ttatgagttc 1500
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acactggacg atgtccccag cgcacgcacc cagttacct tgcctgcctt caacccctcg 1620
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tcagctggca ctggcgctgg ctatggatc cttcttcgtt ggtgcagca caggacaccc 1860
gggtgtgcaca accagagcca tggatggat gcccctgcag aattgaaggt gagggcaaaag 1920
atggagtcoc tggatggatc atggcagccg ccccttcacc ccacccagat ctctggatac 1980
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ggtcgtggag atcaagcttg ggacgtcggtt cccgtgcggc tgaagaagaa agtgaagcag 2100
tatgaactga cccatgttgc ctgtggcagg ccgtacgagg tgaagctgtt agcttcaac 2160
aaacacgagg acggctacgc tgctgtgtgg aaggggcaaga cggagaaggc gcccacgcca 2220
gacctgccta tccaggggg gccaccgcgtt cccctgcctt atgtccacgc agagtcacac 2280
agctccactt ccatttggct tcgggtggaa aagccagact ttaccactgt caagattgtc 2340

aactacactg tacgcttcgg cccctgggg ctcaggaatg cttcccttgtt cacctactat 2400
accagctcg gagaagacat ttcattggc ggcctgaaac catttaccaa gtacgagttt 2460
gcggtacagt cccacggagt ggatatggat gggcccttt gctccgtcgt agaacgctcc 2520
accctgcctg accggccttc aacacctcct tctgacctgc gcctgagccc cctgacacca 2580
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gagggaaaca tcttcagtgc agaggtccat ggccttagaga gtgacactcg gtatttcttc 2760
aagatgggag cccgcacaga gttggggcct gggcccttt cccgcttgca ggtatgtgatt 2820
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ggtgtctgcc tggcccttct ctgcctcctg gcctgcattgt gtgctggcct acgacaaaagc 2940
tcccacaggg aagcccttcc cggattgtcc tcctcaggca ccccaggaaaa cccagcgctc 3000
tacacaagag ctgcgttgg gcctccctggtt gtcctctgtt cccatgagtt ggagtccctc 3060
gtgcattcctc gtccccagga ttggtcccca ccacccctcag atgtggaaaga caaggctgaa 3120
gtacacagcc ttatgggtgg cagtgtttca gattggcggg gccactccaa gagaaagatc 3180
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cagacactgc tgctgcaagc cctgggttat gacggataa agagcaacgg gagaaagaag 3360
ccgtccccag cctgcaggaa tcaggtggaa gctgaggtca ttgtccactc cgacttcggt 3420
gcatccaaag gatgtcctga ctcacccctc caagacctgg agccagagga accactgact 3480
gcagagactc tgcctccac gtctggagct gtggatctgt ctcaaggagc agactggctg 3540
ggcaggggagc tgggagggtg ccaaccaaca accagtgggc cagagaggct cacctgctt 3600
ccagaagcag ccagtgcctc ctgctcctgc tcagacctcc agcccaagcac tgctatagag 3660
gaggccccctg ggaaaagctg ccagcccaa gcccgtgtc ctctaacagt cagcccaagc 3720
cttcccaggg cccctgtctc ctctgctcag gtccccc 3756